

In other words, the brown stock, or, more generally, pulp has to be diluted prior to its introduction into a washing apparatus. Also, it has to be kept in mind that the brown stock or pulp should be as gas-free as possible as the presence of gas in the pulp has a negative effect both in the washing/filtering operation and in the treatment of the filtrates later on. For instance, filtrates having a high gas content tend to start foaming when they are pumped further, just to name one problem caused by excess gas in the filtrates.

The so-called delignification process is followed in the process by the pulp screening, the aim of which is to separate the material unwanted for further process and especially for the final product from the pulp. Screening is, however, an operation requiring the consistency of the pulp to be diluted to about 1 - 3 %, depending on some degree on the apparatus to be used. In order to dilute the pulp from the discharge consistency of the washing apparatus of over 20 % to the consistency of a few percent required by the screening apparatus, an intermediate tank is arranged in the process subsequent to the washing apparatus for pumping the necessary amount of dilution liquid. In most cases the pulp from the washing apparatus is discharged into the intermediate tank through the top thereof, whereby the pulp is discharged directly adjacent the dilution mixer located at the bottom of the tank and is quickly mixed with the dilution liquid introduced preferably through the mixer so that pulp in relatively even consistency can be pumped from the tank into the subsequent process stage, the screening apparatus.

WO-A1-92/03613, on the other hand, discusses a so-called short circulation of a paper machine which is used for flowing a pulp slurry between a low consistency (3 - 5%) pulp storage tank and the forming wire of a paper making machine. The short circulation includes a pipe system for conveying the slurry from the storage tank toward the forming section and a deaerating centrifugal pump interposed in the pipe system for causing the slurry to flow and for removing gas from the slurry, and for venting the removed gas to a location outside of the pipe system. After the deaeration of the slurry, the slurry is diluted by means of filtrate received from the forming section of the paper machine.

Several problems have, however, been observed in the pulp production process described above.

5 Firstly, especially after the oxygen stage there are relatively much gaseous substances in the pulp that are not separated from the pulp even during washing, but they pass through the washer to the intermediate tank. In the atmospheric condition of the intermediate tank the gases lift a portion of the fibres in the diluted pulp to the level of the surface of the liquid in the tank, whereby a dense fibre cover is formed on the surface. The fibre cover will prevent almost all separation of gases  
10 from the diluted pulp, whereby the gases pass with the pulp to the screening apparatus and from there further into the process. Additionally the presence of gas

space and construction costs.

The method for treating pulp according to the invention, in which method pulp is moved from a first, higher consistency to a treatment in a second, lower consistency, is characterized in that

- a) gas is separated from the pulp in a consistency higher than said second consistency,
- b) pulp is pumped in the low consistency treatment, and
- c) pulp is diluted to said second consistency prior to the treatment in said consistency.

The arrangement for treating pulp according to the invention, the arrangement comprising at least a first pulp treatment apparatus, from which pulp is discharged in a first consistency, a second pulp treatment apparatus requiring a second consistency, lower than the discharge consistency of the first pulp discharge apparatus, and a pump for transferring pulp into the second pulp treatment apparatus, is characterized in that both an apparatus for degassing the pulp at a consistency higher than said second consistency and an apparatus for diluting the pulp into the consistency required by the second pulp treatment apparatus is arranged between the first and second pulp treatment apparatuses.

Other characterizing features of the method and arrangement according to the invention are disclosed in the appended claims.

In the following, the method and arrangement according to the invention are described in more detail, with reference to the appended drawings, of which figure 1 illustrates a prior art process arrangement,

figure 2 illustrates a process arrangement according to a preferred embodiment of the invention,

figure 3 illustrates a process arrangement according to another preferred embodiment of the invention,

figure 4 illustrates a process arrangement according to a third preferred